TEXAS INSTRUMENTS

Family of Computers

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International 99/4 Users-Group

EDUCATION • ENTERTAINMENT • PERSONAL ENRICHMENT

EDITORIAL

by Charles La Fara
President
International 99/4 Users-Group

Before I start out on my rampage, I need to say that I believed in the TI Personal Computer (99/4) when I bought my first one at $1050.00 (console and monitor) and I still believe in their products today. Through this belief and with the help of some dedicated employees we have put together one of the strongest and wide ranging user organizations in personal computer history.

Through our efforts we have launched the careers of such authors as Charles Ehninger, Pewterware, A.S.D. & D., 99er Magazine and others and have asked for little in return. We have always helped TI in any way we could not only promoting their products while other retailers laughed at them, but notifying them of consumer attitudes, helping them debug products and stopping important projects of our own to work on some thing for them. We have fought off up-start competition and continue to be the largest and fastest growing Users organization dedicated to TI computer products in the world.

Our "tell it like it is" policy to our members has sometimes brought criticism from TI, 99er Magazine and other Users-Groups, but has continued to be the reason for our high creditability among our members. For this reason we will be putting on an all out effort this year to expand our membership base, newsletter publication, and Software Exchange Library. Additionally, we will search for new products and services to offer our members which can be delivered on time and with the upmost quality.

I personally would like to apologize to the hundreds of our members who ordered TI products from us during this Christmas season only to find them backordered because TI was unable to supply us. This was a situation which we had no control over. The truth of the matter is that large retail accounts such as K-Mart, Target and other mass merchandisers, whose sales personnel's knowledge of personal computer products most times is on about the same scale as our family goldfish, received large shipments of products which were ordered months in advance. TI knew that they must fulfill these obligations so many of the smaller retail accounts who prefer to purchase TI products from authorized TI distributors some how lost out in getting product which they had on order. Many of the distributors we contacted just prior to the writing of this article have not received Consoles, Indoor Soccer, Video Chess, Music Modules, Speech Editors, Football and other high demand TI products since mid October. In most cases this was not due to the fact that they had not ordered product but that TI was unable to produce enough product to cover all orders on a timely basis. Many of these products

and several of the more popular TI packages continue to remain on back order without any word from TI as to when product is to be shipped.

These product shortages coupled with the fact that TI was only able to deliver, on time, 24 of the 60 new products it announced at the June 1982 C.E.S. (40 of the 60 made it before years end) leads us to believe that some changes need to be made. With a reported 750,000 99/4's and 99/4A's in the hands of consumers TI must supply us with new quality software products on a timely basis to keep us happy. Can this be done? TI's past history certainly would not lead us to believe so. While competitive companies are producing million selling arcade software packages for their machines TI failed to announce one such product for the entire first half of 1983, despite the fact that PARSEC has sold more copies than any other Module in the TI line since it's introduction in August of last year. With a current change in contractual agreements for third party software suppliers, architectural changes in the machine and the recent departing of it's top three game programmers TI can hardly sit back and bask in the glory of console sales alone. Now is the time for real action to prove that TI is truly number one in this fast paced industry!

Although it would seem that I have just put TI through the ringer I also need to come to their defense. It is extremely hard for any company of any size to go through the growing pains that come when product demand doubles every 60 days. More American companies go down the tubes each year from too rapid a growth rate than for lack of business. New production lines, qualified employees, larger computers, and new buildings are not found overnight. Anyone who has been involved with 99/4 has had to make major changes in their business operation and none, including us, have been able to totally keep up with the demand. Changes in technology occur in this industry faster than the consumer can ever comprehend and we must somehow find the patience to live with this fact.

As I said at the beginning of this editorial, I believe in the TI Family of computers stronger now than ever before. I am proud of the decision I made to own a TI and feel very strongly that both myself and our thousands of members will benefit positively from their decision to own this exciting computer product.

Charles La Fara

TI INTRODUCES A NEW FAMILY OF COMPUTERS

On January 6, 1983, Texas Instruments announced at the CONSUMER ELECTRONICS SHOW, two new computers which will be additions to an entire family of personal computer products from their Consumer Product Division.

The first of the family members is the Compact Computer-40. The new Compact Computer-40 (CC-40) has an integrated LCD Display, is programmable in Enhance BASIC, and can run preprogrammed applications software loaded from either plug-in solid state cartridges or from cassette tape cartridges.
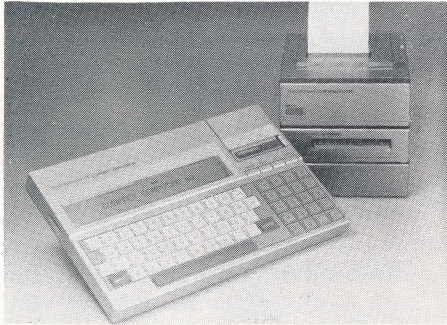
Compact Computer-40

The system is battery operated and fits unobtrusively on a desk or into a briefcase alongside papers and documents. It is designed to be used as a small personal desktop cordless computer and for communications to a remote computer. Its small size and battery operation also provide extensive capability for portable computer applications; such as, computer operations where AC power supply is not available. We expect the computer to find its way into a broad range of applications for professional, technical, and personal use and think it is the ideal tool for both high school and college students.

Because of its small size, battery operation, integrated display, solutions software, and low-cost battery-operated peripherals, it offers a truly personal computer system for the first time.

The computer console has a 34K byte built-in read-only memory (ROM) that contains a BASIC language interpreter allowing operation in BASIC immediately after power-on. The BASIC language built in the CC-40 is comparible with the TI BASIC used in TI's 99/4A Home Computer. Calculator functions are easily available through immediate equation evaluation. The computer contains 6K bytes of user-addressable random-access memory (RAM) and can be expanded to 16K bytes. The CC-40 has a suggested retail price of $249.95 and will be available in the first quarter of 1983.

A plug-in module port is provided for application software of up to 128K bytes of ROM. This port can also be used to expand the random-access memory of the computer. The back of the console houses a Hex-bus intelligent peripheral interface connector allowing connection of any Hex-bus compatible peripherals to the new family of computers including the 99/4A as well as future TI products.

Twenty-two software applications packages, including 8 plug-in Solid State cartridges and 13 Wafertape cartridges, will be available in the first quarter. The plug-in cartridges, which have suggested retail prices ranging from $39.95 to $124.95, are: Mathematics, Finance, Perspective Drawing, Statistics, Business Graphics, Nonparametric Statistics, and Advanced Electrical Engineering ($59.95 each); Editor/Assembler ($124.95); and Games I and II ($39.95 each). Wafertape cartidges, which have a suggested retail price of $19.95 each, are: Elementary Dynamics, Regression/Curve Fitting, Pipe Design, Production and Planning, Inventory Control, Electrical Engineering, Thermodynamics, Photography, Solar Energy, Profitability Analysis, Quality Assurance: Sampling Plans, and Quality Assurance: Control Data. A total of 75 application solutions cartridges (48 solid state and 27 Wafertape programs) will be available by the third quarter of 1983. TI is initiating aggressive third-party authorship programs as well as developing software internally.

The International 99/4 Users-Group is currently reviewing its Software Exchange Library for programs which will aid new owners of the CC-40 with immediate software needs. TI has assured us that we will receive an evaluation unit as early as possible to assist new owners with software and technical support.

The CC-40 console is 9½ x 5¾ x 1 inch and weighs 22 ounces. The display is a scrollable 31-character liquid crystal display (LCD) capable of displaying both upper and lower case characters. In addition, there are 18 built-in indicators for user feedback including shift, control, function, degrees, radians, grads, I/O in progress, upper case lock, error, low battery, left and right scroll flags, and 6 user-settable flags.

The keyboard has a staggered QWERTY key arrangement with a numeric keypad. Key spacing allows for easy key entry without making the unit excessively large. A tilt stand is built into the back of the console to provide an optimum viewing and keying angle.

Four AA alkaline batteries provide power to the console for up to 200 hours. Memory contents are retained even when the unit is turned off. The unit may also be connected to a standard 115-volt ac power outlet using an optional ac adapter, AC9201, available for a suggested retail price of $14.95.

The second new computer entering the family will be the 99/2. The 99/2, is believed to be the first 16-bit computer for less than $100 and is designed to compete with the highly popular Sinclair/Timex computer. Unlike most computers in this price range, the TI-99/2 Basic Computer uses software on solid state cartridges as well as on cassettes. In addition, TI is introducing new low cost peripherals

and software for the TI-99/2 that will also work with TI-99/4A and other computers in the new TI computer family.

The TI-99/2 will be targeted primarily at the technical enthusiast, engineer, or student in the home.

TI-99/2

Additionally, we expect the computer to be purchased as the first computer in the home for those who are just beginning to learn about computer systems, or as a second computer in the home after the purchase of a TI-99/4A Family Computer.

The TI-99/2 console has an elastomeric typewriter-like keyboard with raised keys in a staggered QWERTY arrangement similar to the TI-99/4A. The computer has 4.2K bytes of built-in random access memory (RAM) and can be expanded to a total of 36.2K bytes of (RAM). Most peripherals for the new system will plug into a Hex-bus peripheral-interface connector in the rear of the console. The Hex-bus port allows users to connect any peripheral developed for the Compact Computer Family. (This does not include the Peripheral Expansion System for the 99/4A). Currently, these consist of the RS232 Interface, HX-3000; the Wafertape digital tape drive unit, HX-2000; and the HX-1000 four-color printer/plotter. Other peripherals such as modems, printers, a wand input device, and a b&w TV monitor will be available in the second and third quarter of 1983. (Video output of the 99/2 is b&w only).

One of the most impressive features of the 99/2 is the speed of **console**

BASIC. The units which we saw demonstrated at the winter CES ran some **twelve times faster** than their big brother the 99/4A when identical programs were typed into both consoles. In exact tests performed by the Users-Group staff the 99/2 console BASIC performed twice as fast as an IBM Personal Computer on the floor of the show.

Two Solid State Software cartridges, "Learn to Program" and "Learn to Program BASIC", will be available initially for the unit. Other cartridges will be available later. Suggested retail price of the cartridges is $19.95.

Twenty software programs will be available on cassettes during the second quarter of 1983. Educational programs include: Picomath-80, Math I and II, Statistics I and II, Sunrise Time, Datetime, and Civil Engineering. Programs for Personal Management are: Household Formulas, Checkbook Manager, Purchase Decisions, and General Finance. Entertainment cassettes include: Lunar Landing, Bioplot, The Minotaur, TI Trek, and Mind Games I, II, III, and IV. Picomath-80 is priced at $19.95; all others are $9.95 each. These programs, as well as all user-written programs, can also be run on the TI-99/4A Family Computer.

"We do not see any major changes in the 99/4A"

In addition to TI software and predicted products from third parties the International 99/4 Users-Group will be supporting the 99/2 with its current Software Exchange Library and hopes to add many new programs especially designed for the 99/2 owner.

The TI-99/2 features monochrome

display capability and contains a built-in RF modulator. The included video cable and antenna switch are used to connect the computer to any television set. A cassette interface cable is also included to interface directly to the new TI Program Recorder or another cassette tape player. In addition, the TI-99/2 comes with an AC adapter, a user's manual, and a demonstration cassette. Suggested retail price for the TI-99/2 Basic Computer is $99.95; availability is second quarter of 1983.

Shown for the first time behind closed doors was the fourth Family member, the 99/8. Although this was simply a prototype version of things to come, we here at the Users-Group can't help but get excited about the potential of this new machine. Informed sources have told us that the 99/8 should be ready for production sometime during the fourth quarter of this year and it will support an 80K RAM memory straight out of the box at the unbelievably low suggested retail price of $495.00. Additional rumors indicate that total RAM capability could be expanded to 512K with mass disc storage in the multi-megabite range. New keyboard styling and relocation of the GROM slot to facilitate vertical insertion of solid state modules enhance the overall aesthetic value of this machine.

Although few additional details on the 99/8 have been released we have been assured by representatives of TI that all software in the new Computer Family will be upward compatible from the CC-40 upward to the 99/8.

We do not see any major changes in the 99/4 in the upcoming year with the exception of possible cosmetic enhancements which should do nothing but improve sales among certain market segments.

We here at the International 99/4 Users-Group are extremely excited about TI's new family of computers and will be telling you more about them in future newsletters.

POTPOURRI

NEWSLETTER WILL BEGIN TO ACCEPT ADVERTISING

In an effort to better inform our members of new products for the TI Family of Personal Computers the International 99/4 Users-Group will begin accepting paid advertising for its bi-monthly newsletter.

Space reservation deadline for our March issue is Feb. 18, 1983 with camera-ready art due by March 5. Advertising rates for material from full page to 1/9 page inserts can be obtained by writing Mr. Terry Heim at the Users-Group office, 7908 N.W.23rd Street, Suite # 5, Bethany, OK 73008 or by calling him at (405) 787-8521.

All advertising is subject to the Editors approval and the Editor reserves the right to reject any advertising. All products will be advertised at the published suggested retail price of the manufacturer and it will be up to the individual reader of our Newsletter to actually determine the selling price.

The International 99/4 Users-Group Newsletter reaches a larger segment of 99/4 and 99/4A owners than any other publication of its kind. "Our new format, which will begin in March of 1983, will also appeal to selected retail outlets generating greater sale potential for our advertisers", stated Charles La Fara, President of I.U.G.

I.U.G. LIBRARY SERVICES

The International 99/4 Users-Group is happy to announce I.U.G. Library Services. The duties of I.U.G. Library Services include review of Owner-Written & Translated programs submitted to our Software Exchange Library, preparation of the Owner-Written Software Catalog, and consumer assistance pertaining to programs in the Software Exchange Library.

Heading this new service is Mr. Guy S. Romano, an avid 99/4 owner, author and educator. Mr. Romano will also be writing timely articles for our newsletter which are intended to help our members best use the Software Exchange Library.

ALL EXCHANGE PROGRAMS ARE STILL TO BE SENT TO US AT OUR BETHANY, OK ADDRESS!!!

I.U.G. Library Services will maintain a telephone hotline for those members who have difficulty with the operation of any program in our Exchange Library. This hotline is for operational problems only. Tape products or disk programs which will not load into your CPU should be returned to Oklahoma for rework or replacement.

Mr. Romano and his staff are currently in the process of updating the entire Exchange Library and we expect to complete work on a new edition of the Library Catalog by March. We currently have over 300 new and revised programs for the new Catalog and think that many of these new programs will be enjoyed by our entire membership.

For those of you who experienced operational difficulties with an Owner-Written program and wish to contact Mr. Romano, you can call (415) 753-1194 between the hours of 8:00 a.m. and 4:00 p.m. Pacific Time. After hour calls will be answered by a recording and your call will be returned promptly the next working day.

I.U.G. PUTS NEW COMPUTER ONLINE

In an effort to better serve our ever increasing membership The International 99/4 Users-Group has made several changes in its operation over the last two months.

First was the installation of a new computer system that could keep pace with our mailing list. A decision was made to purchase the TI Business System 672 main frame computer. With its powerful 990/10A processor, 512K RAM and 43.2 megabytes of disk storage it should be able to handle about anything we can throw at it.

We have just completed the data entry of our membership list and will be adding our order entry and invoicing systems in the near future. Using a communication board and remote modem/printer system (scheduled for early March) we will be producing invoices for TI products at our A.B.M. warehouse sight in Kansas City, rather than relying on the Postal Service. This should speed-up order processing of these products by as much as 3 days. Additionally, with each invoice easily accessable from any of the six 911 terminals we have in our office, there should be no delay in checking complete order status.

Several of the new employees hired during the Christmas rush will remain with us as full timers which will bring our total staff to 12. For your convenience, here is a list of I.U.G. officers and staff.

Charles La Fara - *President*

David McLaughlin - *Vice Pres.*

Virginia La Fara - *Sect./Treasurer*

Terry Heim - *Adm. Assistant*

Dorothy Armstead - *Office Mgr.*

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Joy Cooley - *Adm. Assistant*

Laurie Matlock - *Order Entry*

Linda Spurlock - *Membership*

Linda Cooley - *Data Entry*

Cos Bowlin - *Filing*

Susie Eakins - *High Speed Duplication*

Marry Tilley - *High Speed Dupli.*

Laurie Alsop - *High Speed Dupli.*

TI EXTENDS REBATE AND FREE SPEECH PROMOTION

Due to the fact that TI was unable to meet product demand during their recent $100 rebate on the 99/4A console and Free Speech Synthesizer promotion they have extended both offers until April 15, 1983.

If you wish additional details on either of these promotions contact:

Texas Instruments, Inc.
Customer Service
P.O. Box 53
Lubbock, TX 79408
(800) 858-4565

MORE COSBY

TI announced that they have put together their biggest advertising and promotions budget ever to promote the entire Family of TI Personal Computers for 1983. Hard hitting television, newspaper and magazine advertising featuring entertainer Bill Cosby has already started and will continue through the year. (See chart)

Late third quarter and early fourth quarter ads will hipe the value of the first 16-bit computer under $100 - the 99/2. The new CC-40 will get heavy newspaper and technical journal support the entire year. William Turner, Vice President of TI's Consumer Products Division says, "We are very excited about the new product line and ad campaign and feel that we are offering quality high-tech products at reasonable prices." We agree with Mr. Turner's comments entirely and feel that TI is setting a standard that others can only follow.

Bill Cosby getting a light from I.U.G. President, Charles La Fara

	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
TI COMPACT COMPUTERS				
Business Print				
Computer Enthusiast Print				
Campus Promotion				
Professional Technical Journals				
Trade Promotion				
TI-99/4A HOME COMPUTER				
General Consumer Advertising				
Television				
Magazines				
Newspapers				
Computer Enthusiast Advertising				
Magazines				
Technical/Scientific Advertising				
Magazines				
Educational Advertising to Parents				
Magazines				
Promotions				
$100 Rebate				
Free Speech Synthesizer				
Retail Support				
In-Store Demonstrations				
Computer Advantage Clubs				
TI-99/2 BASIC COMPUTER				
Consumer Advertising				
Magazines				
Technical/Scientific Advertising				
Magazines				
College Advertising				
Newspapers				
College Directories				

POTPOURRI

THE LIBRARY CORNER

Library Service gets many calls from people who encounter problems with games and graphics programs in which the program indicates that a certain key should be pressed to make something happen but when the key is pressed nothing really happens. This problem exists, usually because the program was written on the 99/4 Computer and involved the use of SPLIT KEYBOARD on the machine. (See the appendix in your manual for more.) When the 99/4A replaced the 99/4 Texas Instruments had to change some of the values for keys used in split keyboard mode because more keys were added to the keyboard and some of the keys were changed in function. We have made up the following chart for your use in overcoming this frustrating problem. We urge you to keep the chart in a safe place since no one has ever released such a listing for use.

KEYBOARD UNIT # 1 (Left Side)			KEYBOARD UNIT # 2 (Right Side)		
KEY	99/4 VALUE	99/4A VALUE	KEY	99/4 VALUE	99/4A VALUE
1	19	19	6	19	19
2	7	7	7	7	7
3	8	8	8	8	8
4	9	9	9	9	9
5	10	10	0	10	10
Q	18	18	Y	18	18
W	4	4	U	4	4
E	5	5	I	5	5
R	6	6	O	6	6
T	11	11	P	11	11
A	1	1	/	**	16
S	2	2	H	1	1
D	3	3	J	2	2
F	12	12	K	3	3
G	**	17	L	12	12
Z	15	15	;	**	17
X	0	0	G	17	***
C	14	14	B	16	***
V	13	13	N	15	15
B	***	16	M	0	0
Space	17	**	,	**	14
Shift	16	**	.	14	13
			Enter	13	**

** DOES NOT EXIST

** DOES NOT EXIST ON THIS MODEL
***BELONGS ON KEY UNIT OPPOSITE FROM WHERE LISTED.

Now how can this help you. It's easy! In all the listings above where the values are the same for BOTH columns, the problem area is where they are different. If you are running a program using split keyboard that tells you to push a certain key and nothing happens, before you push the panic button just try another key in this way. If the instructions, for example say to push the "shift" key and no response is evident, then just look for the shift key in the chart. See what value it has for the 99/4. Then look in the 99/4A column for the SAME VALUE. Then look under the key column to see what is used instead of the "shift" key. In this case it is "B".

We hope that this will give you ready relief if you encounter such a problem. This chart will give you an answer instantly. But if it still doesn't work, please give us a call at Library Service. That's what we are here for — to help!

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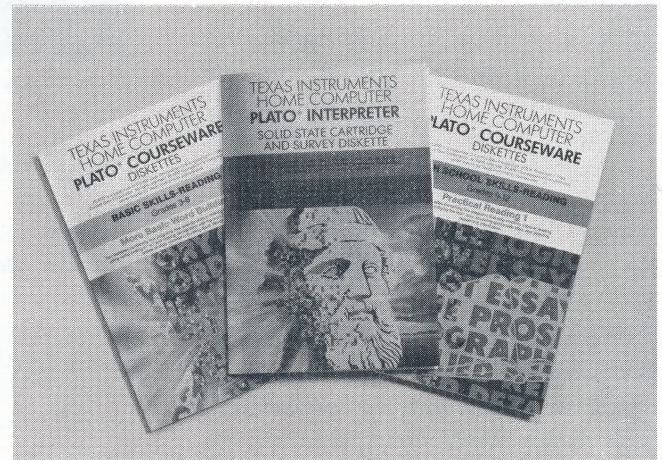
PLATO COURSEWARE BOOM OR BUST?

The PLATO* courseware series of programs will soon be available to 99/4 and 99/4A owners who have disk systems. Developed by Control Data Corporation for use in schools primarily via terminals from romote main frame computers, PLATO has been years in the making at a cost of millions of dollars.

The 108 PLATO courseware packages cover reading, mathematics and grammer in the Basic Skills for grades 3 - 8 and mathematics, writing, science, social studies and reading in the High School Skills for grades 9 - 12 should be a wel-

SOFTWARE

come addition to anyone's software line. PLATO packages however may not be as successful as both TI and CDC think they will be.

There are several reasons why we think that the overall PLATO program will be a BUST! One is the initial cost of the equipment to get started with PLATO. The users system will need to include a disk system (about $650) to RUN the very first program. Second is the cost of the PLATO packages themselves. $49.95 per package is no real bargain and that did not include the cost of the module you must purchase to operate any of these programs. Third, please tell me any dealer or distributor who is going to take on 108 individual new unproven packages of anyones software? That is if TI can get them out on time, which to this point, as we all know is a real joke. Finally the overall quality of what we have seen so far is well below even the early Scott Foresman Modules that sell below the cost of any of the P.LATO products.

*Frankly good educational software products are needed for the TI Family of Computers*

Frankly good educational software products are needed for the TI Family of computers but until products can be delivered to the public on cassette or Solid State Modules TI will continue to loom in the background as a leader in

this important segment of the personal computer industry.

*PLATO is a trademark of Control Data Corporation.

CONVERSATIONAL SPANISH LEARNING SOFTWARE

A new software package for people who want to learn conversational Spanish has been developed by Texas Instruments under license with Westinghouse Learning Corporation.
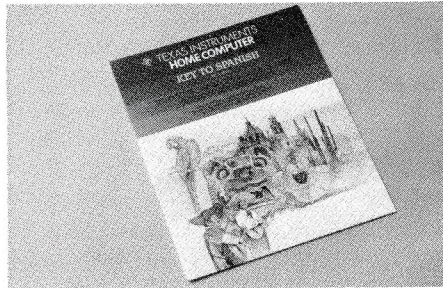
The package, Key to Spanish, consists of a three-ring binder containing four Solid State Software cartridges, four audio cassettes, and an instruction manual. The software is designed primarily to teach vacation travelers or businessmen the Central and South America dialects of Spanish.

An introductory lesson and six subsequent lessons and word games are contained in the cartridges. The audio cassettes, which are controlled by the cartridges, help beginning speakers learn to pronounce Spanish in conjunction with the lesson plans. The system concentrates on useful phrases and words that are most common in day-to-day Spanish usage. Because the system is designed to let students learn at their own pace, they can disconnect the cassette player from the computer and operate it manually to control the pace.

Users will need a TI-99/4A Family Computer and a cassette player,

such as the new Texas Instruments Program Recorder. Suggested retail price for the software album is $149.95; availability is second quarter of 1983.

TI WRITER — UnTIed
by A. Poubelle

On many Occasions Texas Instruments has stated that the 99/4 Home Computer (and the 99/4A) was intended for home use only and that they would not develop items for it that would have business applications. This is an injustice to a marvelous machine that has been too often berated by many who never took the full time to understand it completely. The attitude of TI seemed to reinforce that unjustified negativity from outside. It is, therefore, most gratifying to see that TI has chosen to change course for a more positive direction and with new programs is allowing the 99/4A to realize its full potential while allowing us users to enjoy the benefits of this new and open attitude.

TI-WRITER is a word processing program module dedicated to a wide range of applications in word-processing and text file manipulation. It comes with a Command Module and a disk that holds its programs and three "practice" texts for the user to play with while learning how to operate the system. TI-WRITER requires Memory Expansion, RS232 interface, disk controller card, at least one disk drive and a printer.

The unit comes with a hefty manual and a keyboard insertion strip along with a "Quick Reference Card". Unfortunately, the review package supplied to this reviewer came with the manual only.

This review is being written by

SOFTWARE

an "average user" who is not an engineer or computer specialist. Therefore, the problems this reviewer encountered are most likely the same as those other "average users" will. To prepare for this review, I spent about 8 hours in familiarizing myself with the manual to see how well I could retain the most important features of the program without having to resort to the manual.

This was followed by about 32 hours in approximate 4 hour sessions at the keyboard actually using the program.

DOCUMENTATION

The manual contains about 163 pages of material and is quite complete in its scope if not its clarity. It is divided into approximately 4 major sections. The first is a tutorial which is quite well written and will guide just about anyone through the maze with patience and gentleness.

The next section explains the EDIT functions and associated commands of the program. This also is written in a rather straightforward manner that is readily assimilable with some diligence on your part. This is followed by the section on Format Commands. In reading and re-reading this section, I began to feel that perhaps the manual was written by a committee rather than an individual. The clarity and attention, so obvious in the preceding sections, are even more formidable, albeit numerous and broad in scope. They usually take a 3 space form such as ".FI" and to further confuse us most of them must be the first item on a line and the only item there. Others can be combined; yet others can be placed as the last item on the line. In the 32 hours of use, I had to make constant reference to the manual "Quick Reference Section", 17 8.5 x 11",

single-spaced pages of material!!! The keyboard may be changed with "CTRL U" to access other codes for special applications in printer instructions. Also, a seemingly useful function ".TL" allows us to change the value of any

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The TI-WRITER is dedicated to a wide range of applications in word-processing

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were lacking. A sample is quite illustrative, "For example, if variable 3 is the last name of the person to whom the letter is addressed, the command of a value to variable 3". This is from a paragraph on "Define Prompt".

PROGRAM FUNCTION

On power up after leaving the TI main title screen, one sees a choice of 7 TI-WRITER's, each one in a different language. How thoughtful, I thought. But if you are not a speaker of English, you'd better take a course before using TI-WRITER. The "other" language prompts are limited to the initial main screens only. When actually in the "Edit" program English returns as the dominant force.

After choosing TI-WRITER one sees three choices: Edit, Format and Utility. Although absolutely no mention of "Utility" is made in the manual, I presume that this will serve for the "program patches" that will be forthcoming (I hope very, very soon). After entering the Edit mode one senses a "deja vu" because the screen looks just like that of the Editor/Assembler. It works that way too. In attempting to give us an 80 column screen that has to work on a 30 column one, we are presented with TI's answer of three over-

lapping screens. If one wants to scroll the screen horizontally, with the full cursor control granted us with this program, we can get a nice easy to follow "ticker tape" flow when we are at the right end of the screen, but instead of continuing this harmonious flow, we engage in "jack-rabbiting". We must automatically jump to the next screen. In doing this, the cursor also jumps to a new place on the screen and the eye must endeavor to find it before it can continue reading. In word-processing application this method of screen-jumps is both very tiring to the eye and nerve-wracking to the brain. Given the choice, even though it is far from ideal, I would opt for the limitations of the "normal" 28 column screen because that way I have all the text in front of me ALL the time. The ideal in a word-processor is to be able to present on screen an EXACT replica of the text as it would appear on paper. This is not possible with TI-WRITER (or any other for the 99/4A for that matter) and hence, the 3 screen method is but another compromise.

When typing, TI has thoughtfully provided for changing the screen and character colors to adjust to varying room light conditions. At the top of the screen, after pressing ESCape (FCTN 9) the edit commands appear on one line. From this one chooses an editing activity. But other than this THERE ARE ABSOLUTELY NO HELP SCREENS. For that it's back to the manual. Edit commands give us just about everything we could want (IN DUPLICATE). Many of the functions can be effected by two different keys, which only adds to mental confusion. I don't know why this wide redundancy was chosen. The Format commands

SOFTWARE

one key to equal any one or more other keys. This seems like a great boon. I thought I could save lots of time by letting the "#" key equal the ASCII codes for the word "computer". That way I only need the "#" for a whole word. It doesn't work that way. If you have Graftrax Plus on an Epson, you can't send special codes either. The program will only send those codes built into it, apparently and ignores all others.

With the Format program, you set up a routine for formatted printing. It is extremely fast. You may, at your option, use a non-existant mailing list for mass-mailed letters (you have to write a program for this to be able to create your mailing list file!). Other options increase the flexibility of the program like stopping at the end of every page if you are using single sheets. By far, though, the very most frustrating aspect of the program is that it ALWAYS sends an automatic form feed before it starts printing, whether you want it or not ! ! !

ERROR HANDLING

Like all TI command module programs, TI-WRITER is basically bombproof. I was unable to crash the program with even the most outlandish input. With modules we seem to be quite safe at all times. The program accepts only what is reasonable or it rejects it. But as with other modules, errors are noted by reference to an error code which requires the manual for further interpretation.

CONCLUSIONS

TI-WRITER is a very flexible word-processing program. But the problems with it are not in lack of flexibility, but are rather in the MANNER this flexibility is implemented. This MANNER is cumbersome and awkward to the point of distraction and could have been accomplished in a more direct way.

With TI-WRITER one is restricted to an 80 column line maximum. If one wants to use 132 column or 44 column width with "Word Wrap" and right justified margins, one must give up. The program does not allow this kind of flexibility.

TI-WRITER would be an excellent choice for a small business or a writer, a student writing a doctoral dissertation, for example, where one person would·be able to devote full time and attention to becoming familiar with the program, its capabilities, and the piethora of commands and rules that abound. The casual, occasional user may well be overwhelmed by all there is to learn and memorize.

This program was not written by an independent software developer, but rather by TI itself. Given the resources available to TI and TI alone, then this program should represent a standard for any others to follow. Unfortunately, in its present initial form, it does not meet that criterion.
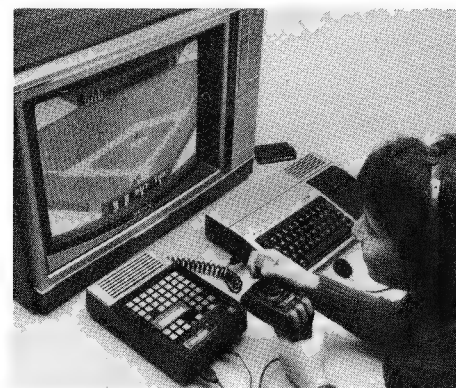
HARDWARE

VOICE RECOGNITION!
M.B. AND TI TRY IT AGAIN

Voice recognition, plus voice synthesis, will be made available for the first time on any personal computer if both parties can live up to new contractual agreements recently signed by TI and Milton Bradley Company says Mr. Mike R. Meyers, Vice President of Product Research & Development for M.B.

Currently on the drawing board are 10 new software packages developed for M.B. by Joyce Hakanson & Associates of Berekly,

CA. The new software will utilize an "expander unit", (suggested retail under $100) developed by M.B. which will plug directly into the 99/4A console. The "expander unit" will use a 64 position key pad with individual overlays for each game module. (The unit pictured below is a prototype and may not resemble the actual production unit.) The headset microphone for the voice command function will plug directly into the "expander unit" to give the operator the ability to use up to 10 inneractive words or phrases to position screen ob-

M.B. Expander System

jects or answer questions or commands.

HARDWARE

"We are very excited about this new technology", said James O' Connell, Vice President of R&D for Milton Bradley. "For the first time in our company's 123 year history we can truly offer the ultimate inneractive game", he went on to tell Charles La Fara, I.U.G.'s President at the winter Consumer Electronic Show. Additionally several of the new software packages in this non-exclusive arrangement, will offer some educational value.

"We are very excited about this New Technology"

From what we have seen so far, this new M.B. chip technology will open a whole new world for the personal computer industry. Imagine, if you can, telling a screen character such as an outfielder to catch a fly ball and then throw it to the second baseman to complete a video double-play, without ever touching the keyboard or a joystick. It's almost frightening isn't it? Some of the new M.B. software will work only with the "expander unit" and some will work utilizing only the 99/4A.

New Milton Bradley triple-axis joystick

Additionally M.B. showed a new triple-axis joystick for the TI Family of computers which should become available later this year. The version we were able to play

with at the C.E.S. had a great feel and preformed better than any other remote control device we have seen to date. M.B. officials have assured us at the I.U.G. that we will be able to test all of their new products in the near future and we will be keeping members informed of the progress of what we feel is the "Consumer Product of the Decade".

LOW COST PERIPHERALS

TI has announced that it will offer 99/4A owners several new low cost peripherals which can be used connected to the 99/4A console via a Hex-bus attachment PHP1300. The new Hex-bus attachment is about the size of a Speech synthesizer and will allow the use of an RS232 interface, Wafertape tape drive unit and Printer/plotter. (See photo of CC-40).

Additional low cost peripherals are in the planning stages and may

include modems, printers, and a wand input device.

The Hex-bus attachment is expected to be available sometime during the second quarter of 1983 at a retail cost of $59.95. The RS232 will retail for $100 and the Waftertape drive unit will be introduced at $140.00.

The new Wafertape tape drive unit will allow, for the first time on a TI Family Computer System, the storage of a program to tape by filename. Instead of the user entering a program using the SAVE CS1 the user will enter a command like SAVE HEXBUS1. PROGRAMNAME. Once the program is saved to the Wafertape it can then be called back using a command like OLD HEXBUS. PROGRAMNAME without having to know the tape counter number as on a standard cassette. This eliminates the need for cataloging tape counter numbers on tapes where multiple programs are stored.

ACCESSORIES

NEW CASSETTE PROGRAM RECORDER ANNOUNCED

A new compact cassette Program Recorder designed for use with the TI-99/4A Family Computer and the new TI-99/2 Basic Computer is now available from Texas Instruments. The Program Recorder, manufactured by G.E., is optimized for use with the TI-99/4A and 99/2 computers as a program and data storage/retrieval system.

The Program Recorder is a perfect desktop complement to either system. The recorder package includes a computer interface cable for the TI-99/4A, while an inter-

face cable for the TI-99/2 is included with that console.

Major features of the unit include the ability to be controlled from

Program Recorder

ACCESSORIES

the TI-99/4A, an Automatic Recording Level Control (ALC), a digital tape counter, clearly marked optimum settings for volumn and tone control, color-coded input jacks for easy setup, a pause control, and a built-in condensor microphone which allows use as an ordinary audio cassette recorder.

The Program Recorder, which has a suggested retail price of $69.95, can operate either on four Size C batteries or on ordinary AC power

through the included cord.

NEW PLASTIC STORAGE CABINET

A storage cabinet for TI-99/4A cartridge or cassette software packages has been announced by Texas Instruments. The new cabinet holds 12 cartridges or cassettes in two sliding drawers and is designed to be stackable. It will be available in the first quarter of 1983 for a suggested retail price of $14.95.
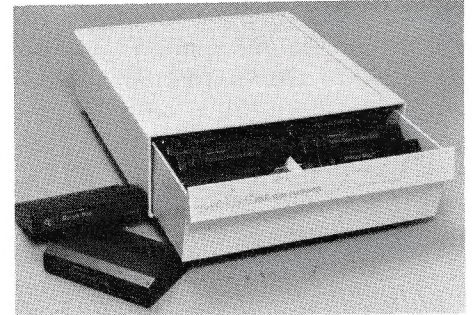
New Plastic Storage Cabinet

THE ASSEMBLY LINE

THE SECRET OF TEXT MODE REVEALED: 40 COLUMN SCREEN CAN BE USED IN BASIC
by Bill Gronos

Thank you for the terrific response to The Assembly Line, which will now be a regular feature. My phone has been very busy and I'm getting mail nearly every day. Please excuse me if your letter didn't get a reply: unfortunately, I have to earn a living inbetween the sessions spent with my 99/4A.

Firstly, let me give the corrections to the typos in the last article. I proof read it at two different stages, but since it went from the final typesetting to the press without me seeing it, some lethal errors crept in. Now I know better than to use "I"s and "Z"s for statement labels.

Page 8, 11th line up from the bottom of column 1: "b TEXT' MYPROG' ". should be "bTEXTb 'MY PROG' ". Same page, 3rd column, 7th line up from bottom: LI 1,2 should be LI 1,Z. Page 9, 2nd column, 10th line from bottom: SWPB @T, @T(3) should

be SWPB @T(3). Same page and column, 6th line from bottom: JMP 1 should be JMP I. There were several other minor errors of small consequence.

The susceptibility of assembler source code to typographic errors will be a continual problem. Julian Wan of Ann Arbor, MI suggests that I give the hex list along with the program. It's a good idea, but will reduce the amount of code that will fit a given article length.

Due to popular request, I will forego what I had intended to cover and share the secret of entering 40 column text mode. It isn't too difficult and is fairly well explained by TI. I think the misunderstanding comes from the confusion between CPU and video display processor (VDP) resisters. VDP regs are not directly available to the CPU, i.e. they are "memory mapped".

You are given a special utility to alter them, the VDP Write To Register (VWTR). You access this utility, like all the others, by "bullwhip" (bullwhip is my affectionate name for the BLWP instruc-

tion. BLWP @VWTR is entered as BLWP @>6034 on the Minimen. The following code will place your assembler prog in text mode:

bLIb0,>1F0

bBLWPb@>6034 (VDP Reg1 is put in text mode)

bSWPBb0 (Put "FO" in MSB of RO)

bMOVBb0, @>83D4 (Copy of VDP R1 must be put in >83D4, or R1 will revert to it's previous state when the KSCAN utility is used)

bLIb0, >7F4 (prepare to load VDP R7)

bBLWPb@>6034 (VDP R7 selects foreground and background colors for chars)

And that's all there it to it! Now you have 960 screen positions (40 x 24) instead of 768 (32 x 24).

What about loading the small character set? No need to. The "power-up" char set is in reality the small char set at least it is on my "4/A". What the Editor/

THE ASSEMBLY LINE

Assembler manual calls the "standard" char set is so big that the letters overrun even in normal mode. I kept trying to load the small char set and couldn't understand why the letters didn't set smaller. The writing staff of TI got me again!

JOKE OF THE DAY:"THOROUGH DOCUMENTATION SHOULD BE A GOAL OF ALL SYSTEM DEVELOPMENT EFFORTS." (EXCERPT TAKEN FROM A TI MANUAL)

USING TEXT MODE IN BASIC

This presents surprisingly few problems. All you have to do is end the above assembler prog with "bBb*11" and you can call it from a BASIC prog. The BASIC print statement will still work, but it doesn't realize it now has a bunch of extra room. Also, several lines of garbage will appear at the bottom of the screen after entering text mode because the color table is now being interpreted as text.

CALL HCHAR and CALL VCHAR still work, but they also fail to recognize the extra space. CALL HCHAR (1, 1, 65, 960) will be treated the same as CALL HCHAR (1, 1, 65, 768).

How are we to use all that extra space? Stop scratching your head, that was a rhetorical question. The BASIC solution is to use the CALL POKEV statement:

10 FOR X=0 to 959
20 CALL POKEV (X, 161)
30 NEXT X
40 GOTO 40

Assuming you have previously linked to an assembly subroutine, this prog will fill your screen with "A"s, though it's a little on the slow side. The sharper readers will note that 161 is not the code for the letter "A", which is normally 65. The sharpest readers will know why 161 is used rather than 65-BASIC screen offset. You must add 96 to the char value to put the correct letter on the screen: "Z" would be 90+96, so 186 would be the required value. This offset is not needed when you stay strictly in assembler, but must be considered when linking from BASIC. So although you can use 256 chars in assembler, you have only 159 in BASIC.

We can speed things up by only using POKEV for the area untouched by HCHAR:

10 CALL HCHAR (1, 1, 65, 767)
20 FOR X=768 to 959
30 CALL POKEV (X, 161)
40 NEXT X
50 GOTO 50

Of course, the ideal solution would be to use another assembler subroutine. This is the approach I've taken. Once you get into assembly, even short delays become intolerable. Instead of giving you two separate subroutines I have combined the initialize text mode and display string progs into one package. Both will be accessed by linking to the same entry point definition and the CPU will figure out which one you want by the parameters that you pass.

Minimemory users must define their own entry point, as explained in my first article and which is also explained in the Minimem booklet. Since it seems that many of you are having trouble with this, I'll briefly give you the steps: while you are in the Line By Line assembler, type in the following:

bAORGb>7FE8
bTEXTb'MYPROG'
bDATAb>7D00

You access the routine from your BASIC prog with CALL LINK ("MYPROG", ROW, COLUMN, STRING). To first enter text mode, use the statement CALL LINK ("MYPROG", 0, 0). You also use this same statement when you want to clear the entire screen. Remember, CALL CLEAR won't erase positions 768-959. Here is an example of a basic prog which uses the text mode utility:

10 CALL LINK ("MYPROG", 0, 0)
20 FOR L=1 to 24
30 CALL LINK ("MYPROG", L, 1, "1234567890 123456789012345678901234567890")
40 NEXT L
50 CALL KEY (0, K, S)
60 IF S=0 THEN 50
70 CALL LOAD (-31788, 224)

Run this prog after loading your Minimem with the assembly prog. What on earth does line 70 do? If you don't have it, you wouldn't see anything on your screen when the prog ended. Even with this your screen won't become visible until another key is pressed. Your screen disappears because BASIC resets VDP Reg 7 when a prog ends and defines the text mode chars to be transparent. It doesn't automatically put VDP Reg1 back into normal mode, though. However, address -31788 is put into Reg 1 when ever a key is pressed and 224 is the normal value. You can see what multicolor mode looks like by entering CALL LOAD (-31788, 232) and then pressing any key. Type some more chars and see the color blocks change. You exit multicolor mode as with text mode with CALL LOAD (-31788, 224) and hitting a key. You can't enter bit map mode

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with this method because it's mode select bit is in VDP Res 0. Bit map mode is only available on the 99/4A. Of course, you can easily enter this mode in assembler (now doesn't that wet your appetite!). Here's a demo of multi-color mode that doesn't require any assembler subroutine:

```
10 CALL LOAD (-31788, 232)
20 INPUT "PRESS ENTER":Z$
30 RANDOMIZE
40 PRINT CHR$ (INT (RND*
26+65));
50 GOTO 40
```

For an active display change 40 to:

```
40 PRINT CHR$ (INT (RND*
3+128));
```

Surprising, isn't it? Yes, there is a lot to learn about this computer. VIC 20 and Atari owners, eat your hearts out!

I've gotten off the subject again. The text mode routine won't handle numeric variables, but they present little problem. Simply convert them to strings with the STR$ function. The next prog shows how easily numbers are handled by printing a square root table:

```
10 CALL LINK ("MYPROG",
0, 0)
20 FOR R=1 to 24
30 FOR C=1 TO 27 STEP 13
40 N=N+1
50 CALL LINK ("MYPROG",
R, C, STR$ (SQR (N)))
60 NEXT C
70 NEXT L
80 GOTO 70
```

Lines them decimal points up reaaal nice, don't it? When you stop the prog your screen will again be blank, so type in: CALL LOAD (-31788, 224) in the blind.

The complete assembly code listing is at the end of this article - if the typographer doesn't murder it. It is set up for the Minimem, but Editor/Assembler users can load it with just a few changes. Instead of the utility addresses used with the bloop statements, you can use the refs, e.g. BLWP @VSBW. However, you will have to load the BASIC Utilities file from the E/A diskette to get the STRREF and NUMREF functions. Also, eliminate the A0RG >7D00 line.

You can see from this prog the compactness of assembly language; the entire prog takes only 160 bytes. Assembler gives you the STP advantage - Space, Time and Power. You won't believe the things I can get my computer to do! ! ! Many of you expressed a desire to learn assembly language faster than one lesson per newsletter, so I'm writing a booklet called MINIMEMORY MAGIC. No prior knowledge will be required. It will contain mostly unique material that I obtained by sweating into my keyboard, which is probably why I had to yank off half of the keytops and spray the contacts with TV tuner cleaner to get the keys to quit bouncing.

If you have any requests or questions, send them in. If you would like a personal reply, enclose a stamped self-addressed envelope. My address is:

BILL GRONOS
9505½ S.E. 15th, Apt. B
Midwest City, OK 73130

One reader, John Staron, passed a nice tip to me. By loading the 1 to a 1000000 counter into an unused area of CPU scratchpad ram and also loading the resisters there, you can cut the execute time down to 6.8 seconds instead of 12, a significant improvement. However, I got no replies to my

challenge to cut the speed of my on-screen counter by 20%. Many of you are as excited about assembler as I am. Don't give up! It's worth the headaches and frustration. Maybe I should say you'll get the STPM advantage, "M" meaning money: 85 scoots for a Minimum sure beats the Big Bucks it would take to add all you would need to write in Pascal.

BASIC TEXT MODE ROUTINE

```
AORG>7D00
*GET ROW & COL FROM BASIC*
CLR 0
LI 1,2 ! GET COL. FIRST
BLWP @>6044 !NUMREF UTIL.
BLWP @>601C !XMLLNK UTIL.
DATA >1200 !CONVERT TO
INTEGER
MOVB @>834B, 3
SWPB 3
LI 1, 1 ! GET ROW
BLWP @>6044 !NUMREF UTIL.
BLWP @>601C !XMLLNK
DATA >1200
MOVB @>834B, 3

* TEST FOR "CLEAR" *
CI 3,0 !TEST FOR "CLEAR"
JNE D !JUMP TO DISPLAY TEXT
```

ENTER TEXT MODE

```
*SET VDP REG 1 TO FO*
LI 0, >1FO
BLWP @>6034 !VWTR UTIL.
SWPB 0 !SAVE A COPY OF
MOVB 0, @>83D4 !VDP REG 1
LI 0, >7F4 !SELECT COLORS
BLWP @>6034 !OF CHARS
*CLEAR SCREEN*
LI 0,959
```

THE ASSEMBLY LINE

```
LI 1, >8000
L BLWP @>6024 !VSBW UTIL.
DEC 0
JOC L
B  *11  !RETURN TO BASIC

         *DISPLAY STRING*

*PREPARE TEXT BUFFER*
D LI 4, >2800 !MAX STR LENGTH=
40
MOVB 4, @ST
*GET STRING*
CLR 0
LI 1, 3 !GET 3RD VARIABLE
LI 2, ST
BLWP @>604C !STRREF UTIL.
```

```
*CHANGE ROW & COL.*
*INTO SCREEN LOCATION*
SWPB 4
CLR 5
MOVB 3, 5 !GET ROW #
SWPB 5
DEC 5
MPY 5, 4
SWPB 3
MOVB 3, 4 !GET COL. #
SWPB 4
DEC 4
A  4,5  !R5 NOW=SCREEN LOC
```

```
*COPY STR TO SCREEN*
MOVB @ST, 0 !GET STR LENGTH
SWPB 0
MOV 0, 6
A 5, 0
N DEC 0
MOVB @ST (6), 1
AI 1, >6000 !ADD BASIC SCREEN
BIAS
BLWP @>6024 !VSBW
DEC 6
JNE N
B  *11  !RETURN TO BASIC
ST BSS  42  !TEXT BUFFER

END
```

ASSEMBLY LINE NOTES